

Mottling in citrus leaves.—JENSEN²² has attempted to see whether there is any relation between mottling of *Citrus* leaves and the supply of nutrient salts necessary for chlorophyll formation. Such was thought possible since the Office of Biophysical Investigations had found that mottling is inversely proportional to the humus content of the soil, and that decomposing organic matter increases the soluble salts in the soil of the groves. The following statements from his summary indicate the results of the investigation: "Judged by a comparison of the average percentages of the inorganic elements determined in healthy *Citrus* leaves and in leaves in the medium stages of mottling, the data obtained did not show that the initial mottling could be accounted for by deficiency in the transfer of the iron, calcium, magnesium, and phosphoric acid from the conducting system of the leaf stem and midrib to the mesophyll tissue. On the other hand, sharply localized yellow areas in old orange leaves contained less of these elements than the adjoining green areas (mostly veins), but whether that relation obtained in the initial stage of mottling was not determined. In very badly mottled *Citrus* leaves there was in general an increase in the percentage of these elements in the conducting tissues, including the leaf stems, indicating difficulty in their transfer to the mesophyll tissues in very advanced stages of mottling, probably because the leaf had become functionless."

The process of mottling is seemingly very complex, involving as it likely does an unusually rapid decomposition of chlorophyll and not merely a cessation in chlorophyll formation. This problem may yield to solution, if at all, only after a many-sided attack. In some of the algae, however, loss of chlorophyll seems to be a direct result of shortage of nitrate supply. Work of this Office seems to exclude this as a possibility in *Citrus* plants, as well as to indicate the complex nature of the process.—WM. CROCKER.

Monocotyledony.—WORSDELL²³ has criticized the reviewer's view of monocotyledony in a paper which "is an astonishing one." In fact, we seem to be mutually astonished, neither being able to understand the reasoning of the other. The paper opens with an account of "an uncommon abnormality," which consists of a "forked coleoptile" in a corn seedling, and this phenomenon is the excuse for the rest of the paper. It may be well to record that this "forked coleoptile" is a very common phenomenon, as all know who have had much to do with corn seedlings in field cultivation.

The author has not realized the facts and significance of zonation, which are fundamental in this connection, and zonation is by no means a "superficial phenomenon." Zonation enables one to realize, for example, that a prominent,

²² JENSEN, C. A., *Composition of Citrus leaves at various stages of mottling.* Jour. Agric. Research 9:157-166. 1917.

²³ WORSDELL, W. C., *The morphology of the monocotyledonous embryo and of that of the grass in particular.* Ann. Botany 30:509-524. figs. 10. 1916.